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12/31/2003

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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/750,047
Filing Date: December 31, 2003
Appellant(s): CURRY ET AL.

MAILED
SEP 25 2007
GROUP 1700

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 11, 2007 appealing from the
Office action mailed March 28, 2006.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejections to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct. The terminal disclaimer submitted May 31, 2006, after the mailing date of the

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final office action, was entered on August 27, 2007 and therefore, the obvious type double patenting rejection cited in the final office action is withdrawn.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,680,163	BLIDSCHUN ET AL.	07-1987
5,382,410	PELTIER	01-1995

Bayliss et al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation on Bacterial Spores", Journal of Applied Bacteriology, 47:263-269 (1979).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claim:

Claims 50-53 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over the non-patent literature, Bayliss et al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation on Bacterial Spores", Journal of Applied Bacteriology 47:263-269 (1979) in view of Blidschun et al. (U.S. Patent No. 4,680,163) and Peltier (U.S. Patent No. 5,382,410).

Regarding claim 50, Bayliss et al. teach a method of decontaminating a contaminated surface, the method comprising: applying a photosensitizer [a commonly known photosensitizer] onto the contaminated surface and illuminating the sprayed

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surface with light to cause chemical reactions to decontaminate the surface (see page 263 - ultraviolet (light) irradiation of spores of *Bacillus subtilis* in the presence of hydrogen peroxide produces a rapid kill which is up to 2000-fold greater than that produced by irradiation alone). Bayliss et al. fail to teach that the photosensitizer is electrically charged and fail to teach that the method of decontaminating a contaminated surface comprises spraying the photosensitizer onto the contaminated surface of a person-occupiable space, in an environment open to the person-occupiable space.

Blidschun et al. teach the use of a sterilizing agent, hydrogen peroxide, which is ultrasonically atomized to form a mist, charged and subsequently directed to, e.g. spraying, the [contaminated] surface to be sterilized by an electrostatic field. The electrostatic field causes the exceedingly small charged droplets, which form the mist of the sterilizing agent to be conveyed to the surface (see col. 2, line 58 to col. 3, line 13).

Peltier teaches the controlled generation of electrically charged vapors and/or aerosols from liquids, which are then released directly into the air of a room, or onto the inner surfaces of ventilation system duct work of a building, or onto the surfaces of a ventilation system mechanical equipment, and/or to distribute the vapor/aerosols throughout a building through the ventilation system, e.g. onto contaminated surfaces of a person occupiable space - chairs, floors, rooms, etc., in an environment open to the person-occupiable space - within a building (see col. 2, lines 47-53). Peltier further teaches that the method adds disinfection agents, fungicides, bactericides, viruscides, and related formulates (see col. 2, line 65 to col. 3, line 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Blidschun et al. and Peltier with Bayliss et al. because Bayliss et al. teach the effectiveness of illuminating a photosensitizer, such as hydrogen peroxide, with ultraviolet light for killing bacteria spores on contaminated surfaces. Specifically, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Bayliss et al. and incorporate the step of electrically charging the photosensitizer disclosed by Blidschun et al. and spray it onto a surface of a person-occupiable space, in an environment open to the person occupiable-space, e.g. into a room, enclosed space of any kind, or a building through the building air conditioning system, as taught by the method of Peltier, thus allowing for the adherence of the photosensitizer onto contaminated surfaces of person-occupiable spaces, e.g. chairs, tables, in rooms, etc., in an environment open to the person-occupiable space, in order to kill bacteria spores that may have contaminated these surfaces.

(10) Response to Arguments

I. A. Applicant argues that there is no explicit or implicit teaching, suggestion, or motivation to combine the cited references to produce the claimed invention.

Applicant further argues that in this case the Examiner has used hindsight reconstruction to piece together a collection of references that allegedly teach the elements of the claimed invention, but has failed to show how one of ordinary skill in the

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art would have been motivated to make this combination at the time the invention was made. This argument is not persuasive.

First, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The motivation for combining Blidshun et al. with Bayliss et al. is disclosed by the method of Blidshun et al. who teaches the step of electrically charging the photosensitizer to convey the atomized spray to the surface to be treated. This enhances the sterilization effects by conveying a higher proportion of the atomized photosensitizer onto all of the contaminated surfaces of the container (see col. 1, line 65 to col. 2, line 67 of Blidshun et al.). Such a teaching provides motivation to modify the invention of Bayliss et al. to further enhance and optimize the surface sterilization process. Additionally, motivation for combining Peltier with Bayliss et al. is disclosed in the method of Peltier who teaches the step of dispersing a photosensitizer into a person occupiable space in order to disinfect contaminated surfaces within that space.

Furthermore, all of the claimed elements of method claim 50 are known in the prior art references of Bayliss et al., Blidschun et al. and Peltier. It has been held that a patent for a combination, which only unites old elements with no change in their respective functions, obviously withdraws what is already known into the field of its

monopoly and diminishes the resources available to skillful men. Where the combination of old elements performed a useful function, but it added nothing to the nature and quality of the subject matter already patented, the patent failed under §103. When a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than a predictable result from such an arrangement, the combination is obvious. Therefore, it would have been obvious to combine the teachings of Bayliss et al, Blidschun et al., and Peltier since the combination of the teachings of each of these references would yield predictable results.

B. Applicant argues that it would not have been obvious to combine and modify Bayliss et al., Blidschun et al., and Peltier to produce the invention of claim 50 because doing so would render Blidschun et al. unsatisfactory for its intended purpose.

The applicant further argues that the Examiner proposes modifying Blidschun et al. to spray an electrically charged photosensitizer onto a surface of a person-occupiable space, into an environment open to the person-occupiable space, so that the sprayed droplets contact contaminated surfaces. Applicant asserts that in this particular case there is no suggestion or motivation to combine Bayliss et al., Blidschun et al., and Peltier to produce the invention of claim 50 because the proposed modifications required to combine these references to produce the claimed method would render Blidschun et al. unsatisfactory for its intended purpose. These arguments are not persuasive. Applicant has provided 3 specific reasons to support these arguments:

1. Droplet size

2. Form-fitting electrode and backing
3. "in an environment open to [a] person-occupiable space".

First, regarding applicant's reason 1 directed to droplet size, applicant argues that the present application states spraying droplets onto a surface (as recited in claim 50), as opposed to remaining in an aerosol form, wherein the droplets should have a diameter that is greater than 1-50 μm . Page 22, lines 6-8 of the originally-filed application. Thus, given that claim 50 calls for "spraying an electrically charged photosensitizer onto the contaminated surface" and reading claim 50 in the context of the specification, this means that the sprayed droplets must be greater than 50 μm . Therefore, modifying Blidschun et al. to produce the method of claim 50, which would require spraying droplets greater than 50 μm in diameter, would clearly render Blidschun et al. unsuitable for its intended purpose.

This argument is not persuasive. Blidschun et al. has been relied upon to show the advantage of spraying an electrically charged photosensitizer which provides better adhesion to a contaminated surface thus teaches the step of spraying onto a contaminated surface using an electrically charged photosensitizer. Furthermore, Blidschun et al. is not the primary reference being modified. Bayliss et al. is being modified by the teachings of Blidschun et al. and Peltier. Additionally, the applicant's claimed method of spraying is not limited to a specific droplet size. Therefore, the arguments directed to droplet size are not commensurate in scope with the claimed invention as recited in claim 50. Furthermore, the applicant cites page 22, lines 6-8 of

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the originally filed specification to teach that "spraying" of solution "onto a surface" requires droplets that are greater than 50 μm in diameter. However, page 22, lines 3-8 of the originally filed specification also teach that aerosol droplets typically have diameters in the range of 1-50 μm diameter and that larger diameter droplets are necessary for rapid precipitation onto a surface. Thus indicating that smaller diameter aerosol droplets are used for a slower precipitation onto a surface. Claim 50 does not require that the droplets be sprayed onto a surface within any specific time period. Finally, Blidschun et al. is not being modified to spray droplets that are greater than 50 μm and therefore the principle operation of Blidshun et al. is not rendered unsuitable for its intended purpose.

Next, regarding applicant's reason 2 directed to a form-fitting electrode and backing, the applicant argues that modifying the apparatus and methods of Blidschun et al. to decontaminate a "person-occupiable space" would render them unsatisfactory for their original purpose. The applicant asserts that it would be impractical if not impossible to produce pairs of form-fitting electrodes for every possible "person-occupiable space", e.g. furniture or vehicles, that one would want to decontaminate according to the method of claim 50. Applicant further asserts that modifying the apparatus of Blidschun et al. by eliminating the pair of "concentric electrodes" in order to address this problem would render Blidschun et al. unsatisfactory for its intended purpose. Without the pairs of concentric electrodes that are matched to the shape of container as called for in Blidschun et al., the droplets would not effectively reach the surface of the container and would not be evenly distributed across the surface. This

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would require the use of more sterilant and/or would result in uneven application of sterilant and incomplete decontamination of the container or excessive sterilant residue on the inside of the container, either of which is unsatisfactory.

This argument is not persuasive. Blidschun et al. has been relied upon to teach the advantage of spraying an electrically charged photosensitizer which provides better adhesion to a contaminated surface. One of ordinary skill in the art would recognize using suitable sprayers for treating a desired space using the electrically charged spraying which provides better adhesion as taught by Blidshun et al. Additionally, Blidshun et al. is merely one example of spraying an electrically charged photosensitizer onto a contaminated surface.

The applicant also argues that it is clear that the phrase "person-occupiable space" of claim 50 is meant to include spaces that are intended for human occupation, notwithstanding the fact that one may be able to stuff an infant or small human into small containers.

This argument is not persuasive. The specification does not define a "person occupiable space". Blidschun et al. discloses that the electrically charged photosensitizer is sprayed into bottles that are used for storing foodstuffs (see col.1, lines 5-15). These bottles can be considered "person occupiable spaces" since a person can insert their finger into the bottle. Furthermore, the example of a 5-gallon food container provided by the examiner, on page 12 of the Response to Arguments section of the 03/28/2006 office action, is indeed a person occupiable space since a person can stand inside of the container to occupy the space. More importantly, in the

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rejection of claim 50, Peltier was relied upon to teach a person occupiable space.

Peltier discloses dispersing electrically charged vapors, such as disinfection agents, which are released directly into the air of a room, or onto the inner surfaces of a ventilation system duct work of a building or onto the surfaces of a ventilation system to distribute the vapor/aerosols throughout a building through the ventilation system in order to decontaminate surfaces and air (see col. 2, lines 47-53).

Finally, regarding applicant's reason 3, Applicant relies on the arguments similar to those stated in the first two reasons (reason 1 and reason 2) provided above. Specifically, the applicant argues that the extremely small (2-4 μm) droplets that are crucial for implementing the methods of Blidschun et al. would not travel very far before evaporating or being blown off course "in an environment open to [a] person-occupiable space". Applicant further asserts that as stated in the present application (page 22, lines 7-8 of the specification), the droplet size needs to be larger than 50 μm diameter in order to get rapid precipitation of droplets onto a surface. Therefore, modifying Blidschun et al. to operate "in an environment open to [a] person- occupiable space" would render the methods of Blidschun et al. unsatisfactory for their intended purposes, in that the small (2-4 μm) droplets would be very unlikely to reach their intended target before evaporating or simply losing momentum.

This argument is not persuasive. The term "person occupiable space" is not been defined in the originally filed specification. Furthermore, Blidschun et al. discloses that the electrically charged photosensitizer is sprayed into bottles that are used for storing foodstuffs (see col.1, lines 5-15). These bottles can be considered

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"person occupiable spaces" since a person can insert their finger into the bottle thus being occupied by a person. Finally, Blidschun et al. has been relied upon to teach the advantage of spraying an electrically charged photosensitizer which provides better adhesion to a contaminated surface. One of ordinary skill in the art would recognize using suitable sprayers for treating any size contaminated space or surface using the electrically charged spraying technique which provides better adhesion as taught by Blidshun et al. Blidshun et al. is merely one example of spraying an electrically charged photosensitizer onto a contaminated surface.

C. Applicant argues that it would not have been obvious to combine and modify Bayliss et al., Blidschun et al., and Peltier to produce the invention of claim 50 because doing so would change the principle of operation of Blidschun et al. The applicant further argues that one skilled in the art would not have been motivated to combine Bayliss et al. with Blidschun et al. and Peltier to produce the invention of claim 50 because doing so would change the principle of operation of Blidschun et al. This argument is not persuasive.

First, applicant asserts that in this case claim 50 calls for "spraying" photosensitizer "onto the contaminated surface of a person-occupiable space" and as is made clear in the specification of the present application, "spraying" of solution "onto a surface" requires droplets that are greater than 50 μm in diameter. Page 22, lines 6-8 of the originally-filed application. Then, the applicant states that on the other hand, Blidschun et al. state that their method of decontamination of containers requires delivery of droplets that are much smaller than 50 μm , specifically in the range of 2-4

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μm . Col. 2, lines 1-2 of Blidschun et al. Furthermore, Blidschun et al. specifically state that other methods of applying decontaminating solution, which produce 50-150 μm droplets via spraying, are unacceptable. Therefore, modifying Blidschun et al. to produce the method of claim 50, namely by "spraying" droplets that are greater than 50 μm , would change the principle of operation of Blidschun et al.

The examiner disagrees with these arguments. First, the applicant's claimed method of spraying in claim 50 is not limited to a specific droplet size. Therefore, the arguments directed to droplet size are not commensurate in scope with the claimed invention. Secondly, the applicant cites page 22, lines 6-8 of the originally filed specification to teach that "spraying" of solution "onto a surface" requires droplets that are greater than 50 μm in diameter. However, page 22, lines 3-8 of the originally filed specification also teach that aerosol droplets typically have diameters in the range of 1-50 μm diameter and that larger diameter droplets are necessary for rapid precipitation onto a surface. Thus indicating that smaller diameter aerosol droplets are used for a slower precipitation onto a surface. Claim 50 does not require that the droplets be sprayed onto a surface within any specific time period. Finally, Blidschun et al. is not being modified to "spray" droplets that are greater than 50 μm and therefore the principle operation of Blidshun et al. is not being changed. Blidschun et al. is a secondary reference used to modify Bayliss et al. to provide a teaching that it is well known and obvious to spray an electrically charged photosensitizer onto a contaminated surface.

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D. Applicant argues that Blidschun et al. teaches away from "spraying" and that one skilled in the art would not have been motivated to combine Blidschun et al. with Bayliss et al. and Peltier as proposed by the Examiner because Blidschun et al. teach away from the invention of claim 50. The examiner disagrees. Blidschun et al. clearly discloses that optimum sterilization of the entire surface area of the container is obtained through the use of a sterilizing agent which is ultrasonically atomized to form a mist, charged and subsequently directed to the surface to be sterilized by an electrostatic field" (see col. 2, line 64 to col. 3, line 1). The charged mist of sterilizing agent is sprayed onto the contaminated surface as a result of the electrostatic field causing the exceedingly small charged droplets which form the mist of sterilizing agent to be conveyed to the surface which is to be sterilized (see col. 3, lines 1-4).

Applicant then argues that Blidschun et al. is directed to methods and apparatus for producing very small (2-4 μ m) droplets using an ultrasonic atomization device and further states that Blidschun et al. stress that using an ultrasonic atomization device to generate small droplets is necessary because "conventional spray nozzles produce droplets which have diameters in the range of between 50 and 150 μ m." Col. 2, lines 1-2 of Blidshun et al. However, this argument further provides evidence that Blidshun et al. teaches spraying since Blidshun et al. has provided an alternative spray generating means (ultrasonic atomization) that differs from conventional spray nozzles. Applicant further asserts that the present application also clearly states that for spraying droplets onto surfaces (as called for in claim 50), the droplet size should be greater than 50 μ m and given this explicit teaching away from spraying droplets greater than 50 μ m for the

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purpose of decontaminating a contaminated surface, one skilled in the art would not have been motivated to combine the teachings of Blidschun et al. with those of Bayliss et al. and Peltier to produce the invention of claim 50. This argument is not persuasive because the claimed invention as recited in claim 50 does not require any particular droplet size. Thus, Applicant's argument is not commensurate in scope with the claimed invention.

E. Applicant argues that one skilled in the art would not have been motivated to combine the cited references to produce the invention of claim 50 because the references are from non-analogous arts. The examiner disagrees. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this application, the references of Bayliss et al., Blidshun et al., and Peltier are not considered non-analogous art since they all fall within the art of surface sterilization using dispersed or sprayed disinfectants and they are also directed to the same problem of disinfecting surfaces contaminated with microorganisms. The references of Bayliss et al. and Blidshun et al. are particularly relevant to the applicant's field of art since they both disclose using a photosensitizer to treat a contaminated surface of an object.

F. Applicant argues that the combination of cited references does not

teach all of the elements of claim 50. Specifically, the Applicant argues that the combined references do not teach the element of "spraying". The examiner disagrees. Applicant argues that Bayliss et al. clearly does not teach or suggest spraying. This argument is moot since the examiner is not relying on Bayliss et al. to teach spraying. As stated in the response under subsection "D" it has been shown that Blidshun et al. discloses spraying. Applicant argues that Blidschun et al. refer to their device as having a "precipitating head" (col 6, line 28) rather than a sprayer. However, the precipitating head disclosed by Blidschun et al. does function as a sprayer and this is evidenced by figure 3 which shows the mist being sprayed to the container surface via the precipitating head. Thus, the precipitating head of Blidschun et al. is functionally equivalent to a conventional sprayer. Applicant argues that the methods of Peltier do not disclose spraying of materials; instead the materials are "dispersed" or "vaporized" and released into ambient air or an air duct. However, the definition for "sprayed" is to disperse. Finally, Applicant argues that Peltier and Blidschun et al. disclose forming electrostatically charged mists but in neither case are the droplets projected in a stream towards the object, they are merely released into the air, and in Blidschun et al. there is a separate stream of gas that flows towards the object which carries the droplets to the object. This argument is not persuasive because the claimed invention as recited in claim 50 does not require that the droplets projected in a stream towards the object. Thus, Applicant's argument is not commensurate in scope with the claimed invention.

II. Applicant argues that the second terminal disclaimer submitted May 31,

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2006, which was after the mailing of the final office action, should have been entered since the applicant acting in good faith and provided good and sufficient reasons as to why the terminal disclaimer was not properly filed prior to the final office action. These arguments are moot since the terminal disclaimer submitted on May 31, 2006 was entered on August 27, 2007 and as a result the obvious type double patenting rejection cited in the final office action is withdrawn.

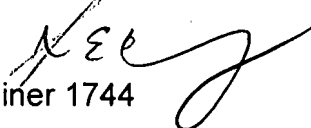
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Sean Conley
Patent Examiner 1744



GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER

Art Unit: 1744

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